WisDOT RD&T Home

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Putting Research to Work

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Technical information for state DOT highway professionals

Prepared by CTC & Associates LLC

Research World

Wisconsin Guide to TRB 83rd Annual Meeting

Wisconsin will be well represented at the upcoming annual meeting of the Transportation Research Board in Washington, D.C. More than 50 University of Wisconsin investigators and WisDOT staff are scheduled to make presentations during the five-day meeting. For presentation descriptions, days, times and meeting room locations, see the *Wisconsin Guide* to the TRB 83rd Annual Meeting at http://www.dot.wisconsin.gov/library/docs/trbguide.pdf.

The Voice of the European Road Available Online

The December issue of the quarterly newsletter *The Voice of the European Road* is now available online. Article topics include the results of an October conference on road safety, the European Commission's European Initiative for Growth, and electronic toll collection. Published by the European Union Road Federation, the newsletter aims to enhance knowledge of European road transport issues. Courtesy of Transportation Communications Newsletter: http://www.erf.be/content/article/detail/2592.

European Conference of Ministers of Transport Newsletter Now Available

The December issue of *ECMT News*, the newsletter of the European Conference of Ministers of Transport, is now available online. Features include preliminary data from a survey for the publication "Trends in the Transport Sector 1970–2002." The newsletter provides news on ECMT policy, programs, publications and meetings. Courtesy of TRB News: http://www1.oecd.org/cem/events/Letters/letter16e.pdf.

Japan's Cutting-Edge Traffic Management Research

The Universal Traffic Management Society of Japan investigates, researches and develops advanced traffic management systems, including integrated traffic control systems, public transportation priority systems, and environmental protection and management systems. The society supports international ITS standardization, and coordinates with other countries to envision the next-generation traffic management system. Visit the UTMS home page at http://www.utms.or.jp/english/index.html.

UK Presents the ITS Resource Pack

The UK Department for Transportation has unveiled the ITS Resource Pack, a guide for local authorities and decision-makers in the deployment of ITS. The Pack is a comprehensive, attractive read that explores the following topics: ITS in Local Government, ITS Deployment, Tailoring ITS to your Needs, and Finding Out About ITS. Read the online version at http://www.its-assist.org.uk/resourcepack.htm.

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TRB E-Newsletter from the Transportation Research Board: http://gulliver.trb.org/news/.
Transportation Communications Newsletter: http://groups.yahoo.com/group/transport-communications/.
CTS Research E-News from the University of Minnesota: http://www.cts.umn.edu/publications/enews/.

Designing for the Future

Steel Bridge Testing Nears Completion; New Design Specs Coming Soon

In the final phase of a 10-year project testing the strength and safety of steel curved girder bridges, FHWA researchers are using a full-scale indoor test bridge and a computer simulation model to analyze how loads affect bridge components. By June 2004, AASHTO plans to use the data to develop new design specifications for steel bridges that will increase safety and reduce construction costs. Link to the article in *R & T Transporter*: http://www.tfhrc.gov/trnsptr/dec03/index.htm#fhwa.

Ask the Experts at Segmental Concrete Bridge Technology Web Site

FHWA's segmental concrete bridge technology Web site is a valuable resource for best practices in SCBT bridge use. (SCBT is a method of joining multiple cast-in-place or precast bridge elements to form a continuous span.) The site addresses engineering issues and construction methods, and features a photo gallery and an archive of "Ask the Experts" questions that have been submitted by site users and answered by team members. Visit the site at http://www.fhwa.dot.gov/bridge/segmental/, or read more about it in the December issue of *Focus* magazine: http://www.tfhrc.gov/focus/dec03/02.htm.

"Smart" Roads and Bridges Communicate with Engineers

A bridge under construction in Star City, W. Va., will be the state's fourth and largest smart structure, packed with 770 sensors, 28 data-collection boxes and a central unit called the brain. The state's existing smart structures have already yielded valuable information, such as that concrete slabs 20 feet long are prone to cracking, while those 15 feet long are not. Courtesy of Transportation Communications Newsletter: http://abcnews.go.com/wire/US/ap20031216_683.html.

Minnesota Study Captures Tourists' Roadway Design Preferences

In a University of Minnesota study of both scenic-designated and non-scenic-designated roadways, travelers placed high value on roadway features related to maintaining scenic and environmental qualities. They were generally satisfied with the number of curves, intersections and driveways on the road segments studied, as well as with the posted speed limits. Travelers' opinions on shoulder width, guardrails and roadside amenities were also studied. See http://www.cts.umn.edu/publications/enews/2003/06/Enewsv1n6_full.html#tourism. Read the full report at www.lrrb.gen.mn.us/pdf/200322.pdf.

Learn from Michigan's Experience at Transportation Summit Site

Michigan DOT has created a Web site devoted to the state's December 2003 Transportation Summit (http://www.mdot.state.mi.us/summit2003/index.cfm). It includes detailed experts' comments, planning team comments and an action plan section for each of nine key issues. One issue identified was "Communication, Consciousness Raising & Public Involvement," which includes discussion on the challenges of getting public input during a project's design phase. See http://www.mdot.state.mi.us/summit2003/communication.cfm. Courtesy of Transportation Communications Newsletter.

I-69 Proposal Features Extensive Environmental Mitigation

Indiana's proposed I-69 extension from Evansville to Indianapolis would include $77 million in environmental mitigation and enhancement efforts, according to a final environmental impact statement released last month. The proposal includes context-sensitive design features, and planners have used multiple public involvement strategies.
Link to the INDOT press release: http://www.ai.org/serv/presscal?PF=dot&Clist=6&Elist=75387.

Construction and Materials Innovations

Improvements to Hot-Mix Asphalt Performance Modeling Released

A shortage of empirical data from the Long-Term Pavement Performance databases hampered the usefulness of HMA performance model methodologies in the 2002 Design Guide. A new NCHRP study—"Refining the Calibration and Validation of Hot Mix Asphalt Performance Models: An Experimental Plan and Database"—closes the gap between available tools and field data through sophisticated modeling and full separation of calibration and validation tools for independent use. See the latest Research Results Digest article at http://gulliver.trb.org/publications/nchrp/nchrp_rrd_284.pdf.

Methods for Testing of Bridge FRP Reinforcement Issued

In November, we noted New York's success in using fiber-reinforced polymer strengthening systems on bridges. The use of FRP remains a hot-button trend in bridge structure maintenance. A new Research Results Digest summarizes a recent Florida study and suggests performance-related testing for evaluation of FRP reinforcement for short-term behavior, environmental and mechanical durability, and aging. See http://gulliver.trb.org/publications/nchrp/nchrp_rrd_282.pdf.

Varied Load Restrictions Curb Freeze-Thaw Impact on Material

Daily and seasonal variations of on-site material properties can affect structural capacities of pavement, in turn calling for load restrictions. Through a study of 35 sites prone to freeze-thaw, an NCHRP report offers data sets for evaluating variations of in-situ material properties that may inform season-sensitive load restrictions. See http://trb.org/publications/nchrp/nchrp_w60.pdf

Asphalt Pavement Analyzer Nears Maturity

NCHRP continues to test Asphalt Pavement Analyzers—rut-inducing lab tools that originated in Georgia in the 1960s and have undergone refinement, including recent developments in France and Germany—for predicting rutting of pavements in the field. Posted by TRB in December, the latest effort to correlate actual rutting with APA testing recommends a refinement of air void levels in cylinder and beam samples. See http://gulliver.trb.org/publications/nchrp/nchrp_rpt_508.pdf.

Updated Fly Ash Guide Online

The FHWA recently posted an online guide to the use of fly ash in highway construction. The fourth edition of *Fly Ash Facts for Highway Engineers* describes the material and its applications, and offers specific direction on the use of fly ash in concrete, asphalt, base courses, fills, soil enhancers and more. It includes conversion factors and specification recommendations for mixes. See http://www.fhwa.dot.gov/pavement/fatoc.htm.

Wyoming Makes Bridges with BRASS

Following the admirable trajectory from empiricism to design, the Bridge Rating and Analysis of Structural Systems software suite developed by the Wyoming DOT has grown from a girder-analysis tool to a full design and capacity rating system. BRASS has drawn national attention for its practical value. See AASHTO's recent article at http://www.transportation.org/aashto/success.nsf/allpages/2003-24Wyoming. Visit the WYDOT BRASS web page at http://wydotweb.state.wy.us/web/brass/.

Minnesota Finds Recycled Aggregate Eminently Useful

Early in December, the FHWA posted a recap of a September conference on Minnesota's use of recycled concrete aggregate. According to the summary, the use of RCA has been a nearly perfect project. The RCA performs well as base course and unbonded concrete overlay, saves the state money, and lessens environmental impacts by saving landfill space, sparing aggregate resources and reducing fuel use for hauling. See http://www.fhwa.dot.gov/pavement/rcamn.htm. For more, see the FHWA page devoted to RCA, including its links to summaries of experiences in Michigan, Virginia and Texas, at http://www.fhwa.dot.gov/pavement/rca.htm.

Operating/Optimizing the System

Changes in Traffic Control Devices to Help Older Drivers, Pedestrians, Bicyclists, Workers

Fluorescent pink signs to alert drivers to traffic crashes, large print on road signs for older drivers, and "animated eyes" to caution pedestrians at intersections are among the improvements federal highway engineers are recommending states consider to make travel safer and easier. The recommendations are included in the Federal Highway Administration's 2003 update of the *Manual on Uniform Traffic Control Devices.* Link to the press release: http://www.fhwa.dot.gov/pressroom/fhwa0334.htm.
Courtesy of Transportation Communications Newsletter.

Revised Manual Helps with Distress Identification

The Federal Highway Administration recently published the fourth edition of the *Distress Identification Manual for the Long-Term Pavement Performance Program,* which provides a consistent, uniform basis for collecting distress data for the LTPP program. State highway agencies use the guide in their pavement management programs as a tool for identifying specific problems and planning repairs efficiently, thus saving both time and money. Link to the article in *Research & Technology Transporter*: http://www.tfhrc.gov/trnsptr/dec03/index.htm#pave1.
Link to the online guide: http://www.tfhrc.gov/pavement/ltpp/reports/03031/index.htm.

40 Years of Ramp Meters

Metering lights were first installed more than four decades ago, and have become an effective tool for loosening traffic jams on congested freeways across the country. Take a look at this brief history of their use, from the first metering light controlled manually by a traffic cop to the impact of hundreds of ramp meters working together in a single city. Courtesy of Transportation Communications Newsletter:
http://www.mercurynews.com/mld/mercurynews/news/local/7573818.htm.

New Highway Signs Urge Drivers to Report Impaired Motorists

Sober motorists in Indiana could play an important role in a new campaign against drunken drivers. More than 500 signs have been posted along major roadways asking motorists to call 911 if they spot someone they believe is driving drunk. The signs were paid for with federal highway funds. Courtesy of Transportation Communications Newsletter:
http://www.courier-journal.com/localnews/2003/12/26in/met-front-signs12260-3331.html.

Your Guide to Transportation Asset Management

AASHTO's latest *Transportation Asset Management Guide* looks at how transportation asset management can be applied to an array of highway agency activities and decisions, including system preservation, operations, and real-time and periodic system monitoring. Read about the guide's highlights in this *Focus* article: http://www.tfhrc.gov/focus/dec03/04.htm.

The Freight Shuttle: Moving Goods, Saving Roads

What if someone developed a system for moving freight that saved money for Texas and the trucking industry, cut pollution and accidents, preserved roads and was profitable to operate? These are just some of the potential benefits of an innovative freight shuttle system being researched by the Texas Transportation Institute. Link to *Texas Transportation Researcher*:
http://tti.tamu.edu/researcher/newsletter.asp?vol=39&issue=3&article=8.

Quick Clearance Event Features New Technology

As part of Florida DOT's new Open Roads Policy, Florida's Turnpike Enterprise recently hosted a "Quick Clearance" event. The demonstration featured heavy-duty wrecker operations for uprighting an overturned propane tanker truck, incident scene control and management training, a new "Photogrammetry" camera program that reduces crash investigation time by mapping crash scenes faster, and much more. Link to the *Transportation News* article:
http://www11.myflorida.com/publicinformationoffice/tnews/November%202003%20T-News.pdf.

Safe Travel/Smart Travel

Sharing the Power of Navigator

To help keep traffic moving in a booming Georgia community, GDOT will allow local public works engineers to tap the power of its Navigator traffic camera system. New connections will let the engineers monitor traffic conditions on neighboring Ga. 400—and eventually on city streets—and quickly reprogram traffic lights to move traffic through town. Link to the article in *The Atlanta Journal-Constitution*: http://www.ajc.com/metro/content/metro/northfulton/1203/18navigator.html. Courtesy of Transportation Communications Newsletter.

Weather and Navigation in the Palm of Your Hand

WeatherData, Inc., has released Storm Hawk, a mobile, handheld weather and navigation system. It features weather-overlaid mapping based on GPS data displayed on a personal digital assistant. Link to the press release: http://biz.yahoo.com/prnews/031118/cgtu008_1.html. Courtesy of Transportation Communications Newsletter.

Mn/DOT Puts TIGER to Work on Roads

Minnesota DOT is embarking on an innovative program aimed at enhancing the security and reliability of the state's surface transportation system by demonstrating and deploying a wide variety of traveler information and traffic operations functions. Read about the Traveler Information Guidance and Evacuation Routing (TIGER) Program at: http://www.dot.state.fl.us/IntelligentTransportationSystems/ITS%20Deployment/Newsletter/issues/December03.htm#TIGER. Courtesy of the SunGuide Disseminator.

Web/Phone Travel Information Service More Influential Than Radio/TV

In the San Francisco Bay Area, survey results indicated users of TravInfo telephone and Internet services were two to three times more likely to change their travel plans than people who relied on radio/television traffic reports to make travel decisions. From the ITS Benefits and Cost Database: http://www.benefitcost.its.dot.gov/ITS/benecost.nsf/ByLink/BOTM-December2003.

This TMC Can Boogie on Down the Road

The Mobile Transportation Management Center supports Caltrans District 12 TMC operations by assisting in incident management and highway system recovery, and providing a temporary TMC facility in the event of catastrophe. An on-board generator powers a kitchen, lavatory and HVAC, enabling operators to spend extended time in the field. From the Caltrans Division of Research and Innovation: http://www.dot.ca.gov/research/operations/mobiletmc/mobiletmc.htm.

WSDOT Prepares for Dashboard Advice Systems

A Washington State DOT project will install fiber-optic cable along major roads, connecting roadside cameras to monitoring centers and providing real-time road condition alerts to drivers through email, cell phones and electronic road signs. Link to the article in *The Oregonian*: http://www.oregonlive.com/metronorth/oregonian/index.ssf?/base/metro_north_news/1072789415183050.xml. Courtesy of the Transportation Communications Newsletter.

'TRAMLAB' Will Probe for Best Ramp Metering Strategies

At the University of Minnesota's ITS Laboratory, researchers are developing the Traffic Management Laboratory (TRAMLAB) simulation system to discover efficient, equitable ramp metering strategies to reduce congestion and enhance safety. Link to the article in CTS Research E-News: http://www.cts.umn.edu/publications/enews/2003/06/Enewsv1n6_full.html#tramlab.

Pioneering a Testbed for Ramp Metering Algorithms

This project has been initiated by Texas DOT to develop a micro-simulation-based testbed for evaluating advanced traffic-responsive and traffic-adaptive ramp metering algorithms. Link to the project abstract and contact information: http://rip.trb.org/browse/dproject.asp?n=9044.